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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/622,978

Applicant(s)

ROEHRIG ET AL.

Examiner

DAVID P. RASHID

Art Unit

2624

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/16/2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4, 5, 7, 9, 10, 22, 23, 25-29 and 31-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 28, 29, 31 and 32 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5, 22, 23, 26, 27 and 33 is/are rejected.
- 7) ☒ Claim(s) 7 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Final Drawing Review (PTO-849)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

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Amendments & Claim Status

[1] This office action is responsive to Reponse (hereinafter “Amendment”) received Apr. 16, 2009. Claims 1-2, 4-5, 7, 9-10, 22-23, 25-29, and 31-33 remain pending; claims 3, 6, 8, 11-21, 24, and 30 cancelled.

Claim Rejections - 35 U.S.C. § 101

[2] In response to Amendment at 9, the previous § 101 rejections are withdrawn.

Claim Rejections - 35 U.S.C. § 112

[3] In response to Amendment at 9, the previous § 112 rejections are withdrawn.

[4] The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Failure to Particularly Point Out and Distinctly Claim

Claims 9-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9-10 depend from a cancelled claim - suggest changing to "method of claim 1 & wherein..."

Response to Arguments

Remarks Unpersuasive regarding Rejections Under 35 U.S.C. § 102

[5] Amendment at 9-13 regarding 35 U.S.C. § 102 rejections with respect to claims 1-2 and 4-5 have been respectfully and fully considered, but are not found persuasive.

However, Giger does not remove distinguishing effects of an x-ray device. Rather, Giger teaches removing pixels that are characterized as 'fat' pixels. The fat pixels may be characterized based on a gray level, or based on the relative x-ray exposure value of the pixel; but in all instances, what Giger describes is the processing of the image to remove the "fat pixels". Giger *does not* describe processing the image to remove effects of an operating parameter, or processing the image to remove effects of a physical characteristic of the x-ray device. These effects are not *removed* in Giger; rather a threshold is applied, and some of the effects (i.e., pixels) are kept, while others (i.e., fat) are removed. Applicant would respectfully submit that what Giger *is* removing is an effect within the *image*, (i.e., a fat pixel) rather than a distinguishing effect of the device *used to obtain* the image (i.e., an operating parameter or a physical characteristic of the device).

...

As best Applicant can determine, it appears that the Examiner is relying on the fact that Giger mentions that x-ray exposure characteristics can be used to identify fat pixels, and thus x-ray exposure characteristics may be subtracted to remove fat pixels as teaching that something *other* than fat pixels is removed. Such a reading contradicts the actual teaching of Giger, who, presenting gray levels *OR* exposure values as alternatives for fat identification obviously did not appreciate an advantage to removing *distinguishing effects of an operating parameter or a physical characteristic of an x-ray device in addition to fat pixels*.

Amendment at 10-11.

However, though it is agreed that "gray level" or "x-ray exposure" are "color spaces" for the images (e.g., gray-level is the range [0, 255], and x-ray exposure is time range [0,10]), the x-ray device does have an exposure physical characteristic (e.g., the longer the object is imaged, the brighter it will be).

If the x-ray machine does have an exposure physical characteristic, subtraction (whether in terms of gray-level or x-ray exposure ranges) will remove the effects of exposure. See Giger at fig. 3 and fig. 6 (showing in fig. 6 after subtraction that the fat areas of the original image are

now of value 0). If there are values of 0 after subtraction (i.e., black), whereas before subtraction the same pixel values were greater than 0 (of which some of the amount can be attributed to x-ray exposure), then subtraction does remove distinguishing effects of x-ray exposure of the x-ray device, in addition to the effects of fat content. The purpose of referring to “x-ray exposure” at 5:57-65 is to show that a degree of x-ray exposure is contained in the images.

While the gray level or exposure values of the original image may result from an operating parameter or physical characteristic of the x-ray device, but they are not the operating parameter or characteristic themselves, The Examiner appears to give no patentable weight to the limitations of the claims which tie the predetermined value directly to the operating parameter or the physical characteristic of the x-ray device. Accordingly, for this additional reason it is requested that the rejection of claim 1 be withdrawn.

Amendment at 12.

However as argued above, exposure values are recorded by the x-ray machine (to be used as a color space) because the x-ray machine inherently creates a degree of exposure in the images it creates (as thus an operating parameter or physical characteristic). Returning fig. 6 after subtraction back to fig. 3 (which looks like fig. 9) must use predetermined values (those values used to create fig. 3 in the first place; e.g., a fixed amount of exposure in the x-ray machine) to transform the digital or digitized x-ray medical image into a standard-form version.

With regard to Applicant's argument concerning claim 5 (Amendment at 12-13), the Examiner has interpreted the same as argued above. The existence of black pixel values in fig. 6 whereas before subtraction they were of values greater than 0 can be deduced that all other x-ray characteristics (other than just exposure) are being removed as well (e.g., at least one of anode material, source to image distance, anti-scatter grid geometry, film characters, screen-film system).

With regard to Applicant's argument concerning “standard form image” (Amendment at 13), it can be interpreted with the definition that if it is desired to bring the subtracted image back into conformity with the original, the original image is something established by authority as a model or example.

Remarks Persuasive regarding Rejections Under 35 U.S.C. § 103

Art Unit: 2624

[6] Amendment at 13-14 regarding 35 U.S.C. § 103 rejections with respect to claims 7 and 25 have been respectfully and fully considered, and found persuasive.

Remarks Unpersuasive regarding Rejections Under 35 U.S.C. § 103

[7] Amendment at 14-15 regarding 35 U.S.C. § 103 rejections with respect to claims 26-27 and 25 have been respectfully and fully considered, but are not found persuasive.

However, even if Santurtun mentions a typically used kVp and mAs, there is no mention or suggestion in Santurtun of a *standard-form image*, which has been generated by processing using predetermined values. Thus, Santurtun fails to overcome the inadequacies described above in Giger. For at least these reasons it is requested that the rejection of claims 9-10 and 26-27 and 31-32 be withdrawn.

Amendment at 15.

However, the rationale of Santurtun does not have to align with the rationale being claimed (which would include the use of standard-form images, which has been generated by processing using predetermined values). See M.P.E.P. § 2144 (IV). *Manueco Santurtun et al.* discloses an x-ray generator with phase-advance voltage feedback (fig. 2) wherein the standard ("typical") x-ray energy suggested is in the range 25-28 kVp (3:3-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made for the method of Giger *et al.* in view of Saito *et al.* to include a standard x-ray energy in the range 25 – 28 kVp for its standard form image representative of the image as taught by *Manueco Santurtun et al.* for providing "...typical requirements for X-ray applications...". *Manueco Santurtun et al.* at 3:5-6.

There is no mention or suggestion in Giger that the normalization is performed based on *first original x-ray voltage parameter* and *first original exposure parameter* as claimed. Rather, Giger mentions only that normalization 'match(es) the average gray level of the original image). In addition, Giger neither suggests or describes processing the image to remove *both fat and distinguishing effects* of the mammography system, as recited in claim 22.

Amendment at 16.

However, see argument above concerning claim 1. The x-ray voltage parameter and exposure parameters are the ones used to create image fig. 3. The first processed image, through the process of subtraction and then normalization at fig. 9 returns those image values back to the

standard-form originally imaged at fig. 3 (the image at fig. 9 would contain the standard x-ray voltage and exposure parameters).

Claim Rejections - 35 U.S.C. § 102

[8] The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Giger et al.

[9] **Claims 1-2 and 4-5** are rejected under 35 U.S.C. § 102(c) as being anticipated by U.S. Patent No. 5,657,362 (issued Aug. 12, 1997, hereinafter "Giger et al.").

Regarding **claim 1**, *Giger et al.* discloses a method for computer aided detection of medical abnormalities (the highlights are abnormalities in fig. 6) in x-ray medical images (fig. 3; fig. 8, item 800) comprising the steps of:

processing (fig. 8, item 803) a digital or digitized x-ray medical image (fig. 3; fig. 8, item 800) of an object ("breast" at 1:62-65) to remove distinguishing effects ("[t]his subtraction process can be performed. . . in terms of relative x-ray exposure (by use of the characteristic curve in the imaging system)" at 5:57-65) of at least operating parameter or physical characteristics ("in terms of gray level or in terms of relative x-ray exposure" at 5:57-65; inherent exposure from the x-ray machine) of an x-ray device (fig. 27, item 2700) used to form said x-ray medical image (e.g., fig. 3) and to remove the effects of fat content ("pixels below the threshold (i.e., fatty) are not included in determining the fit (step 802). The 2-D fit is then

subtracted from the dense regions (step 803)” at 6:23-26) in the object being imaged, thereby forming a processed x-ray medical image (the image after item 803 in fig. 8 is a “subtracted” processed x-ray medical image);

processing (fig. 8, item 804; normalization) the processed x-ray medical image according to predetermined values (the predetermined values needed to construct the “subtracted” processed x-ray medical image back to the original digital image item 800, fig. 8; those values used to create fig. 3 in the first place; e.g., a fixed amount of exposure in the x-ray machine) for said at least one operating parameter or physical characteristic (“in terms of gray level or in terms of relative x-ray exposure” at 5:57-65; inherent exposure from the x-ray machine) to transform the digital or digitized x-ray medical image into a standard-form version (“dense-portion correction” at 6:40-41; fig. 9; the standard-form version being its original state before removal of distinguishing effects as seen between fig. 3 and fig. 9) of said x-ray medical image (“[t]he resulting image is normalized to match the average gray level of the original image” at 6:27-30) characterizing the x-ray medical image of the object that would have been obtained by the x-ray device using said predetermined values therefor (normalizing the image would return it to its original state which is now a “dense-portion correction” version); and

processing said standard form version (the image after item 804 in fig. 8 is now a “dense-portion correction” standard form version) of said x-ray medical image (fig. 3; fig. 8, item 800) with a computer aided detection algorithm (fig. 10b; “the incorporation of the dense-portion correction into the mass detection scheme at the preprocessing image-enhancement stage and at the feature extraction stage are shown in FIGS. 10A and 10B” at 6:40-44) that has been optimized with a plurality of x-ray medical images (fig. 10b, item 1005) that have been similarly processed into standard form versions (it is implicit if not already inherent that for a neural network to be trained, similarly processed images are used) thereof using the same predetermined values (the predetermined values needed to construct the original digital image item 800, fig. 8) for said at least one operating parameter or physical characteristic (“gray level” or “relative x-ray exposure” at 5:57-65); and

storing results (fig. 23; fig. 27, item 2706) of the processing of said standard form version (the image after item 804 in fig. 8 is now as standard form version) of said x-ray medical image

(the image after item 803 in fig. 8 is a processed x-ray medical image) with the optimized computer aided detection algorithm (see above).

Regarding **claim 2**, *Giger et al.* discloses wherein the x-ray medical image is a mammogram (fig. 3; 2:10-12).

Regarding **claim 4**, *Giger et al.* discloses wherein at least one operating parameter or physical characteristic ("relative x-ray exposure" at 5:57-65) of the x-ray device is selected from the group consisting of x-ray energy; exposure ("relative x-ray exposure" at 5:57-65); and distance between compression plates.

Regarding **claim 5**, *Giger et al.* discloses wherein the processing removes distinguishing effects of the following physical characteristics of the x-ray device resulting from at least one of: anode material; source to image distance; anti-scatter grid geometry; film characteristics; and screen-film system (it is inherent the subtraction step fig. 8, item 803 removes at least one of these distinguishing effects; i.e. the transformation from fig. 3 to fig. 6).

Claim Rejections - 35 U.S.C. § 103

[10] The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Giger et al. in view of Saito et al.

[11] **Claims 22-23, and 33** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination between *Giger et al.* in view of U.S. Patent No. 5,954,650 (issued Sep. 21, 1999, *hereinafter* "Saito et al.").

Regarding **claim 22**, while *Giger et al.* discloses a method for processing mammographic images (1:8-19) comprising the steps of:

processing a plurality of digital or digitized formed by the same mammography system to remove effects of the same mammography system and fat content in the breast being imaged,

thereby forming a first processed images (refer to references/arguments cited in the first processing step of claim 1); and

transforming each first processed image into a original-form x-ray mammogram having a first standard form x-ray voltage parameter and a first standard form exposure parameter (refer to references/arguments cited in the second processing step of claim 1); and

storing the standard-form x-ray mammograms (refer to references/arguments cited in claim 1)

whereby visual comparison of x-ray mammograms taken by the same x-ray mammography system is facilitated by comparing standard-form x-ray mammograms derived from mammograms taken by the same x-ray mammography system (refer to references/arguments cited in claim 1 in the third processing step), *Giger et al.* does not teach all of the method steps performed by different x-ray mammography systems in the sense of Applicant's invention.

Saito et al. discloses a medical image processing apparatus (fig. 1) whereby visual comparison of images (fig. 1, item 1) taken by different imaging systems (fig. 1, x-ray CT image, MRI image, and fusion image) is facilitated by comparing images derived from images taken by the different images systems (1:6-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for all the method-steps in the method of *Giger et al.* to be performed by different x-ray mammography systems as taught by *Saito et al.* "...to provide a strongly desired medical image processing apparatus where images of the same position with the same size, which have been imaged by modalities using different imaging methods, are superimposed on and composed with each other and are displayed so as to be able to be compared with each other realistically and visually.", *Saito et al.*, 1:62-67.

Regarding **claim 23**, claim 2 recites identical features as in claim 23. Thus, references/arguments equivalent to those presented above for claim 2 is equally applicable to claim 23.

Regarding **claim 33**, while *Giger et al.* discloses a method for processing mammographic images (1:8-19) comprising the steps of:

processing a plurality of digital or digitized formed by a first x-ray mammography system to remove effects of the first mammography system and fat content in the breast being imaged, thereby forming a first processed images (refer to references/arguments cited in the first processing step of claim 1); and

processing a digital or digitized mammogram of a breast formed by a second x-ray mammography system to remove effects of the second mammography system and fat content in the breast being image, thereby transforming the digital or digitized mammogram into a second processed image (refer to references/arguments cited in the first processing step of claim 1 wherein the first and second x-ray mammography systems are the same system);

transforming each first processed image into a original-form x-ray mammogram having a first original x-ray voltage parameter and a first standard form exposure parameter (refer to references/arguments cited in the second processing step of claim 1); and

storing the standard-form x-ray mammograms (refer to references/arguments cited in claim 1)

whereby visual comparison of x-ray mammograms taken by the same x-ray mammography system is facilitated by comparing standard-form x-ray mammograms derived from mammograms taken by the same x-ray mammography system (refer to references/arguments cited in claim 1 in the third processing step), *Giger et al.* does not teach all of the method steps performed by different x-ray mammography systems.

Saito et al. discloses a medical image processing apparatus (fig. 1) whereby visual comparison of images (fig. 1, item 1) taken by different imaging systems (fig. 1, x-ray CT image, MRI image, and fusion image) is facilitated by comparing images derived from images taken by the different images systems (1:6-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for all the method-steps in the method of *Giger et al.* to be performed by different x-ray mammography systems (and hence the first and second x-ray mammography system being different) as taught by *Saito et al.* "...to provide a strongly desired medical image processing apparatus where images of the same position with the same size, which have been imaged by modalities using different imaging methods, are superimposed on and composed with each other

and are displayed so as to be able to be compared with each other realistically and visually.”,
Saito et al., 1:62-67.

Giger et al. in view of Saito et al. and Manueco Santurtun et al.

[12] **Claims 26-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Giger et al.* in view of *Saito et al.* and U.S. Patent No. 4,596,029 (issued Jun. 17, 1986, *hereinafter* “Manueco Santurtun et al.”).

Regarding **claim 26**, *Giger et al.* in view of *Saito et al.* does not disclose wherein the standard x-ray energy of the standard form image representative of the image is in the range 25-28 kVp.

Manueco Santurtun et al. discloses an x-ray generator with phase-advance voltage feedback (fig. 2) wherein the standard (“typical”) x-ray energy suggested is in the range 25-28 kVp (3:3-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the method of *Giger et al.* in view of *Saito et al.* to include a standard x-ray energy in the range 25 – 28 kVp for its standard form image representative of the image as taught by *Manueco Santurtun et al.* for providing “...typical requirements for X-ray applications...”.
Manueco Santurtun et al. at 3:5-6.

It must be noted that the normalization of the subtraction image will naturally bring the values of the isolated abnormalities of the processed image back into the range of the standard x-ray energy used in the original image. In essence, the x-ray energy used to create the original image will be again seen in the normalized processed image, so motivation can also arise in using a standard x-ray energy in the original image as argued above.

Regarding **claim 27**, *Giger et al.* in view of *Saito et al.* does not disclose wherein the standard exposure is in the range 20 – 200 milli-Ampere-seconds.

Manueco Santurtun et al. discloses an x-ray generator with phase-advance voltage feedback (fig. 2) wherein the standard (“typical”) exposure suggested is in the range 20 – 200 milli-Ampere-seconds (3:3-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the method of *Giger et al.* in view of *Saito et al.* to include a standard exposure in the range 20 – 200 milli-Ampere-seconds for its standard form image representative of the image as taught by *Manueco Santurtun et al.* for providing “...typical requirements for X-ray applications...”, *Manueco Santurtun et al.* at 3:5-6.

Allowable Subject Matter

[13] **Claims 7 and 25** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

[14] **Claims 9-10** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. § 112 set forth in this Office action.

[15] **Claims 28-29 and 31-32** allowed.

Reasons for Indicating Allowable Subject Matter

[16] The following is a statement of reasons for the indication of allowable subject matter:

Regarding **claims 7 and 25**, while the prior art of record discloses the method of claims 1 and 22 respectfully, the prior art of record does not teach wherein an x-ray image of a reference material is formed at the same time as the mammogram and under the same conditions, said reference material having known –ray attenuation characteristics representative of different percentages of fat content in the breast, said method further comprising the step of identifying fat content in the mammogram by comparing exposure values in the mammogram with exposure values on the x-ray image of the reference material.

Regarding **claim 28**, while the prior art of record discloses methods for processing mammographic images such as those of claim 1, the prior art of record does not teach one reference material having an attenuation constant that is approximately the same as that of fat and the other having an attenuation constant that is approximately the same as that of glandular tissue, and then using the exposure information in the images of the first and second reference materials to process the digital or digitized mammogram system to transform the digital or digitized mammogram into a first processed image whereby substantially all effected related to

the physical characteristics of the mammography system and its operating parameters and the effect of fat content in the breast being imaged. **Claims 29 and 31-32** allowable by dependency.

Conclusion

[17] Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

[18] Any inquiry concerning this communication or earlier communications from the examiner should be directed to **DAVID P. RASHID** whose telephone number is (571)270-1578 and fax number (571)270-2578. The examiner can normally be reached Monday - Friday 7:30 - 17:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 2624

/David P. Rashid/

Examiner, Art Unit 2624

/Bhavesh M Mehta/

Supervisory Patent Examiner, Art Unit 2624

David P Rashid

Examiner

Art Unit 26244